

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 February 2007 (01.02.2007)

PCT

(10) International Publication Number
WO 2007/013899 A3

(51) International Patent Classification:

C12N 1/12 (2006.01) C12M 1/04 (2006.01)
C12N 1/20 (2006.01) C12P 1/00 (2006.01)
C12M 1/00 (2006.01)

(21) International Application Number:

PCT/US2006/022443

(22) International Filing Date: 7 June 2006 (07.06.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/688,396 7 June 2005 (07.06.2005) US

(71) Applicant (for all designated States except US): **HR BIOPETROLEUM, INC.** [US/US]; P.O. Box 240548, Honolulu, Hawaii 96824-0548 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HUNTLEY, Mark, Edward** [US/US]; 73-4617 Koloko Halia Place, Kailua-kona, HI 96740 (US). **REDALJE, Donald, G.** [US/US]; 226 Lanai Village, Diamondhead, MS 39525 (US).

(74) Agent: **HSIA, Martin, E.**; CADES SCHUTTE LLP, 1000 Bishop Street, 12th Floor, Honolulu, HI 96813 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
29 March 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CONTINUOUS-BATCH HYBRID PROCESS FOR PRODUCTION OF OIL AND OTHER USEFUL PRODUCTS FROM PHOTOSYNTHETIC MICROBES

(57) Abstract: A process for cultivating photosynthetic microbes comprising Closed Systems for continuous cultivation and Open Systems for batch cultivation, in which (a) the Closed System Area occupies no more than 20% of the Total Land Area of the cultivation facility; (b) batch cultures in the Open Systems are initiated with an inoculum from the Closed Systems containing acell biomass of no less than 5% of the carrying capacity of said Open System; (c) the doubling rate of said photosynthetic microbe is no less than once every 16 hours; and (d) the residence time of the batch culture in said Open System is no more than a period of 5 days.

WO 2007/013899 A3